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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/429,986	10/29/1999	YUJI YAMADA	7217/60017	6609

7590

02/17/2005

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EXAMINER
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PENDLETON, BRIAN T

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 02/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/429,986

Applicant(s)

YAMADA, YUJI

Examiner

Brian T. Pendleton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sotome et al, US Patent 6,850,621 in view of Fujinami et al, US Patent 5,974,152. In figure 3, Sotome et al discloses a three-dimensional sound reproducing apparatus comprising a first filter means 30 for processing a n-channel audio signal (where n=2) with predetermined finite impulse response characteristics excluding reflective sound components and mixing processed portions of the n-channel audio signals. Sotome discloses a pair of second filter means, but the second filter means are for crosstalk cancellation. Sotome does not disclose a pair of second filter means, one second filter means having a first predetermined transfer function including reflective sound components and receiving the first channel signal and the other second filter means having a second predetermined transfer function different than said first predetermined transfer function and including reflective sound components and receiving the second channel signal and the second filter means providing uncorrelated independent processing by setting different delay times corresponding to said first and second predetermined transfer functions to the first channel signal and the second channel signal and an output unit for supply signals to a headphone, wherein the pair of second filter means each comprises a digital filter. Fujinami discloses a sound image localization control device comprising a plurality of delay elements D0-D6, a

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plurality of IIR filters 6a-6g, adder 6h and FIR filter 6i and reproducing through a headphone.

The abovementioned circuit elements are part of convolvers. The IIR filters are used to generate reflection sound components. Thus, it was taught in the art to use a minimum amount of delay elements to generate reflection sound components. Therefore, if one of ordinary skill in the art would have wanted to provide reflective sound components in the apparatus of Sotome, he would have been motivated to use the convolver (second filter means coupled to the first filter means) taught by Fujinami since it used a filter with a shortened filter length and made processing time quicker. Claims 1 and 4 are met. As to claim 3, the IIR filter in Fujinami contains a multiplier, delay unit and adder. A convolver would be for each output from adders 35 and 36 in Sotome.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sotome in view of Fujinami further in view of Inanaga et al. The combination of Sotome and Fujinami teaches an apparatus having a first filter means, second filter means and a headphone. The combination does not teach that the headphone has detection means for detecting rotational movement of the listener's head and varying the transfer functions of the second filter means in response to the movement. However, that feature was taught and suggested by Inanaga et al. It was advantageous to have a vibratory gyroscope in a headphone system for the purpose of changing a filter's characteristics since under normal listening conditions without headphones, a listener's experience will change with the rotation of his/her head. Therefore, the use of the gyroscope added more realism to the listening experience. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of invention to use the teaching of Inanaga et al in the invention described by the combination of Sotome and Fujinami. The modified

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combination would include a gyroscope 30 (having piezoelectric pieces, per claim 6) whose output, which detects head angle, coupled to the IIRs of the second filter means in Fujinami.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sotome in view of Fujinami further in view of Inanaga as applied to claim 5 above, and further in view of Yamada. The combination of Sotome, Fujinami and Inanaga does not disclose a geomagnetic azimuth sensor. Yamada et al teach a headphone system having such a geomagnetic azimuth sensor and changing the delay times of circuit elements 30 according to head movement. For the same reasons above, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Sotome, Fujinami and Inanaga to have a geomagnetic azimuth sensor for the purpose of changing delay times of the second filter means in response to head turning to improve sound realism.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian T. Pendleton whose telephone number is (703) 305-9509. The examiner can normally be reached on M-F 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tran Sinh can be reached on (703) 305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian T. Pendleton  
Examiner  
Art Unit 2644

